Whirlwind Mine Plan of Operations

[See map links for figures referred to in this draft document.]

2.1 Proposed Action

The BLM is evaluating Energy Fuels Resources Corporation's (EFRC) proposed Plan of Operations (POO) for the Whirlwind Mine. BLM's options when responding to the POO would include a) accept the POO as proposed, b) accept with modifications, or c) reject the POO. Approving the POO includes authorizing the following project.

EFRC's Proposed Action consists of reopening two underground uranium mines (Packrat Mine and Urantah Decline) as a combined operation called the Whirlwind Mine. The site is located approximately five miles southwest of Gateway (see Figure 1). Areas of proposed surface disturbance are shown on Figures 4A, 4B, 4C, and 4D. These areas are delineated with solid red lines and include the Whirlwind portal area, Packrat portal area, power drop pad areas for both the Whirlwind and Packrat, one existing vent shaft, and seven proposed vent shafts. The proposed surface disturbance in Colorado totals 22.6 acres and is located principally in the northwest corner of Section 36 and the south half of Section 35, T51N, R20W, NMPM. The proposed surface disturbance in Utah totals 1.4 acres and is located in Section 9, T25S, R26E, SLBM.

The largest single surface disturbance is the mine waste rock pile which would encompass approximately 10 acres and is designed for the life of the mine. This facility would extend eastward from the Whirlwind portal (formerly the Urantah Decline portal) within the gently sloping area between County Road 5/10 to the north and the natural hillside to the south. The north facing side of the waste dump would be graded, topsoiled, and revegetated concurrently as the pile expands to minimize visual impacts and sediment loading of surface water runoff.

Surface water would be routed around the waste disposal area and other surface facilities via diversion channels. Surface drainage within the disturbed area, with the exception of the ore pad, would be routed to a sediment pond via ditches and culverts. Drainage from the ore pad area would be routed to a concrete sump that would overflow to a synthetically lined pond. The lined

pond is also used to store excess ground water pumped from the underground workings. Pumping and discharge of mine water would occur intermittently at the Whirlwind Mine.

This water treatment plan is currently approved under Colorado Discharge System (CDPDES) Permit #CO-0047562 for treatment using a portable trailer-mounted system, and discharge to an ephemeral drainage that flows into Lumsden Canyon.

The potential area of underground mining extends to the limits of the claim block except where limited by topography and land ownership. These potentially affected lands are delineated with a dashed red line on Figure 2. The Rajah 30 Mine has also been excluded from the limits of underground mining because it is flooded. A minimum of 200 feet would be maintained between the Whirlwind Mine underground workings and the existing Rajah 30 Mine workings.

2.1.1 Background Information

The ore deposit is located in the Salt Wash Member of the Morrison Formation, which consists of interbedded fine-grained sandstone (about 60 percent) and mudstone (40 percent). The ore is located within the upper (i.e., Top Rim) red sandstone of the Salt Wash and occurs in areas of reduced gray sandstone and where the sandstone is in contact with gray or green mudstone bands. The uranium and vanadium mineralization occurs in bands that range in thickness from a few inches to in excess of eight feet. The average ore thickness is 2.7 to 3.0 feet. The ore body is located below approximately 500 to 750 feet of cover and can be accessed through adits located on the side of canyon walls and declines and shafts.

2.1.1.1 Urantah Decline

The Urantah Mine was started by Pioneer Uravan in September 1979. It consists of a 3,200-foot-long, single-entry decline that accesses the ore body at a six percent grade plus approximately 700 feet of drift in the Salt Wash member. The decline is supported by steel sets through the Brushy Basin member of the Morrison Formation, which is predominantly shales and mudstones. Both the decline and drifts are about nine feet high by twelve feet wide. Approximately 2,800 tons of ore had been mined when the mine was closed in

September 1981. The mine was later acquired by Cotter Corporation, but remained idle until it was reclaimed in the fall of 2002.

Little Maverick Mining Company reopened the mine under a prospect permit in 2005. Energy Fuels is currently conducting exploration activities under this permit through a lease agreement with Little Maverick. Surface disturbance associated with exploration activities have included opening up an access road, uncovering a buried concrete pad, and building a working pad on top of the reclaimed waste pile. The mine portal was secured with a bat gate; therefore, no excavation was required to access the old workings.

Underground exploration activities have included rehabilitating the existing workings to gain safe access to the ore body plus geological and environmental sampling.

2.1.1.2 Packrat Mine

The Packrat Mine is an older mine that probably was first developed in the 1950's and consists of several miles of drifts with numerous stopes or rooms mined off of each drift. The three Packrat Mine portals are located approximately one-half mile north of the Whirlwind portal and almost 300 feet lower in elevation.

The mine workings extend in a southwesterly direction though the Salt Wash unit, which is relatively flat lying. Early miners used track methods to mine most drifts. The drifts in the south part of the mine are still relatively small with a width of about six feet. The northern drifts were later widened and extended using rubber tired equipment and are typically nine feet high by twelve feet wide. The Packrat Mine had two ventilation shafts; a sixty-inch diameter shaft near the end of the northern workings and a thirty-six-inch shaft called Ten Straight near the end of the southern workings.

The Packrat Mine operated until 1990 when the mine was placed on standby in response to depressed uranium prices. Umetco reclaimed the mine surface area in 2002. Energy Fuels reopened the mine in early 2007 under prospect permit P-2007-003. Under this permit, the road to the Packrat and the main portal were reopened. A small pad area (less than 0.6 acre)

was established in front of the portal. Energy Fuels is currently establishing ventilation and rehabilitating portions of the Packrat Mine so that exploration activities can be safely conducted.

The proposed POO outlines further modifications to the site for the full mine operation. Surface disturbances associated with exploration activities are included in this application so that the Proposed Action would incorporate and supersede existing permits and or approvals.

2.1.2 Underground Mine Operations

Energy Fuels plans to reopen the Urantah Decline and Packrat Mine as a single combined underground uranium-vanadium mine operation called the Whirlwind Mine. The mine would operate one to three shifts per day five days per week. Initially, ten to twelve employees would mine approximately 100 tons of ore per day. As the mine expands and more headings are opened up, up to twenty-four employees may work at the mine and production would increase to an average of 200 tons of ore per day. The mine has a projected life of ten years based on known and inferred resources.

2.1.2.1 Mine Design

Based on existing exploration data, the mine would be initially expanded to the west and south in the direction of the proposed vent shafts shown on Figures 3 and 4D. The thin and irregular nature of the ore body makes it difficult to define the exact location and extent of future mining. Exploration drilling from the surface and long-hole drilling from existing underground workings would ultimately determine the optimum location of future drifts and production stopes.

Future underground mining operations may connect with adjacent mines in the area such as the Lumsden No. 2 and Rajah 49. This would be done primarily for mine ventilation purposes although some older stopes could also be mined. No additional surface disturbance is anticipated at this time because ventilation fans would be installed underground and ore and waste would all be hauled out through the Whirlwind Decline.

2.1.2.2 Mine Plan

Nine-foot high by twelve-foot wide drifts would be driven through known ore-bearing zones to provide access for production mining. The drifts also provide access for geologic mapping, long-hole drilling, rib scanning, and collecting samples. This geologic data would be used to develop detailed mine planning and stope development for each drift.

The ore would be mined using a modified room-and-pillar system. This mining method is a common method for mining in uranium-bearing sandstone and is designed to follow the irregular configuration of the individual ore bodies. The ore seams vary in height with an average seam thickness of approximately three feet. The waste to ore ratio also varies depending on the thickness of the ore and splits within the ore seams. The mines in this area have typically averaged 2 to 3.5 tons of waste per 1 ton of ore.

The existing workings in both the Urantah Decline and Packrat Mine would require rehabilitation prior to the start of full-scale mining. This would include cleaning up rock falls, bolting of the back where needed, establishing ventilation, and installing sumps and pumping stations for the lower portions of the mine where ground water collects. Once the mine meets Mine Safety and Health Administration (MSHA) safety requirements, the existing drifts would be extended into known ore zones. These drifts would have nominal dimensions of nine feet high by twelve feet wide. The 600 to 700-foot proposed drift between the Whirlwind Tunnel and the Packrat Mine would be started first and may be completed under the bulk sampling provisions of the prospect permit. A portion of the existing southern drift of the Packrat Mine would also be enlarged to accommodate modern rubber-tired mine equipment.

As the mine expands, seven ventilation shafts would be added as shown on Figure 3. The location of these vent shafts may change by several hundred feet depending on the ultimate location of the drift and ventilation needs. The ventilation shafts would typically be 72 inches in diameter and cased; however, shaft diameters may vary depending on the drill contractor's equipment. The steel casing would be grouted where it passes through aquifers to prevent intermixing of waters between formations.

EFRC proposes continued pumping of water from the Whirlwind where water has collected in low areas of the mine during the past fifteen to twenty-five years. This water would be treated prior to being discharged to a nearby ephemeral drainage. Once the initial dewatering is complete and the mine is operating, encountered water would be used in mining operations for drilling and dust suppression. Water balance calculations indicate that mine water discharge may be needed intermittently during active mining operations.

2.1.2.3 Mine Operations

A typical equipment list for the underground operation is presented in Section 2.1.2.4 of this document. Jacklegs operating on compressed air would be utilized to drill the blast holes and rock-bolt holes in the drifts and production areas.

Blasting operations would be conducted in accordance with MSHA regulations. Blast holes would be loaded with a blasting cap, chemical booster, and a mixture of ammonium nitrate and fuel oil (ANFO) prills. The blasts would be initiated using a non-electric system (nonels) with the hole pattern, firing sequence, and delays designed to allow for optimum breakage and minimum ore dilution.

The ore and waste rock would be mucked out using small diesel loaders. Ore would be hauled to the surface using low-profile, diesel-powered haul trucks. Some of the waste produced during later development and production may be disposed of underground.

Material storage areas and stationary equipment would also be located underground. Roof bolts, mats, vent tubing, hoses, lubricants, and the smaller and more commonly used equipment parts would be stored underground near the working faces. These locations would change as the mine workings are advanced. Stationary underground equipment would include air compressors, transformers, and ventilation fans.

2.1.3 Surface Facilities

The proposed surface facilities are shown on Figure 4A for the main Whirlwind Mine area, Figures 4B and 4C for the Packrat Mine and power drop areas, and Figure 4D for the ventilation shafts and Whirlwind power drop. Minor changes may be made to the proposed layouts during construction; however, construction activities would be confined to permitted areas and outside of surface drainages. The majority of the ore and waste rock (i.e., over 90 percent) would be brought to the surface from the Whirlwind portal. Any ore or waste brought through the Packrat portal would be transferred to bins where the material can be loaded into highway haul trucks for transfer to the Whirlwind or, in the case of ore, hauled directly to the mill.

A surface equipment list is presented in Section 2.1.4. There would be no processing activities on site as all the ore would be transported to the White Mesa Mill or another existing uranium mill in the region. Should a new mill be built by Energy Fuels, the ore would be transported to that process facility.

The surface facilities at the Whirlwind Project include the following.

- ore stockpile area
- topsoil stockpile areas
- water treatment plant and ponds
- fuel and oil storage areas
- maintenance shops and warehouse
- mine offices and shower locker room (dry)
- designated parking and storage areas
- mine access roads and pads
- utilities
- solid waste storage (trash, scrap metal, batteries)
- ventilation shafts (existing and proposed)
- power drops and associated pad areas
- ore and waste bins at the Packrat portal

Table 2-1 below shows a breakdown of proposed surface disturbance between previously impacted areas and areas that were not impacted extensively by historic operations.

Table 2-1 Proposed Surface Disturbance

Area	Previously Disturbed Acreage	Total Disturbed Acreage
Whirlwind Portal Area		
Portal Bench	2.10	2.35
Access and Facilities	1.00	1.33
Portal Bench Slope	0.70	1.00
Fill Stockpile	0.00	0.27
Expanded Waste Embankment	0.00	9.98
Topsoil Stockpile #1	0.00	1.70
Water Treatment Area	0.00	1.54
Existing 5/10 Road & Shoulder	0.73	0.73
Misc Ditches, etc.	0.00	0.34
Narrow strip north of 5/10 Road	0.04	0.19
Topsoil Stockpile #2	0.00	0.32
Subtotals	**4.57**	**19.75**
Packrat Portal Area		
New Upper Bench	0.60	0.62
New Lower Bench	0.37	0.37
Packrat Road	0.76	0.76
Subtotals	**1.73**	**1.75**
Vent Shafts (Colorado)	0.23	0.46
Power Drop Areas	0.64	0.64
Total Disturbed Area (Colorado)	**6.30**	**22.60**
Additional Shafts in Utah	**0.00**	**1.38**
Total Disturbance (CO and UT)	**6.30**	**23.98**

2.1.4. Surface and Underground Mine Equipment

Trucks used for transportation of ore from the Whirlwind would consist of 14-ton, end-dump trucks with 10-ton pups pulled behind or 23-ton end or side dump haul trucks. These highway-type haul trucks would be owned and operated by a contractor.

The following equipment may be used at the mine operation.

TABLE 2-2
PRELIMINARY MINE EQUIPMENT LIST

Underground Equipment	**Number**
Diesel Skid-Steer Loaders, 2 cy capacity	2 – 3
Diesel Trucks (Buggies), 5 and 10 ton capacity	8 – 10
Development Drill, Jumbo	1
Production Drills, Jacklegs	8 – 10
Exploration Drills, Longhole	1 – 2
Surface Equipment	**Number**
Front End Loader, 2 – 3 cy capacity	1
Backhoe/Skid Loader or Excavator, 80-hp	1
Highway Haul Trucks, 22 to 24-ton capacity	2 - 8
Bulldozer, 200-hp	1
Motor Grader, 140-hp	1
Flat-Bed Truck, 1-ton	1
Pick-up Truck, ¾-ton (4wd)	2
Front End Loader, 2 – 3 cy capacity	1

2.1.5. Waste Rock Handling Plan

The existing bench at the Whirlwind portal would be expanded to provide storage space for waste rock produced from underground mining operations. The waste rock pile would be expanded to the east and gradually raised in height. The pile would have two levels; the lower level at the portal and an upper level to the east. Travel over the pile by the loaded rubber-tired buggies would compact the material creating a low-permeable surface. The waste rock pile would have a capacity of 900,000 tons, which would contain most of the waste rock

generated during the projected ten-year mine life. The remaining waste rock would be disposed of underground in mined out areas. Any waste rock hauled out of the Packrat Portal would be dumped into bins at the Packrat Portal and then hauled to the Whirlwind waste embankment using larger highway haul trucks.

Approved best management practices (BMPs) would be utilized to minimize storm water contact with waste rock as described in Section 2.1.16 of this document.

2.1.6. Ore Stockpile Area

Ore would be end-dumped directly onto an ore stockpile pad located north of the Whirlwind portal. The stockpile pad has been sized to contain up to 15,000 tons of ore, which represents three to four months of full production. The ore would be stored temporarily on site to accommodate transportation scheduling needs. EFRC proposes compacting the top 12 inches of the pad area to 90% of the maximum dry density of the material as determined by Standard Proctor (ASTM D-698). Meteoric water that contacts the pad would be directed to a sump equipped with an overflow that drains directly to the lined pond that feeds into the water treatment plant.

A front-end loader would load the ore into haul trucks. The high moisture content of the ore would minimize fugitive dust from stockpiled ore. Pad dust suppression would be accomplished using magnesium chloride to seal the pad surface. Additional dust suppression measures include tarping of truck beds prior to leaving the mine and spraying water on the ore stockpile and mine haulage roads, as necessary, to control dust during the summer months.

Ore haulage would be performed by contractors who would be required to obtain all necessary permits and clearances, follow Department of Transportation regulations including establishment of spill control plans, and obey Colorado and Utah traffic laws.
Initial operations would require truck haulage from the mine utilizing approximately twenty round-trips per week. As production increases to 200 tons per day, truck traffic would increase to an average of approximately forty roundtrips per week.

The primary haulage route would be via Mesa County roads to Colorado Highway 141 just south of Gateway. Three secondary routes via Grand County, Utah roads to Utah highways may also be used.

2.1.7. Topsoil/Growth Medium Handling

Topsoil would be salvaged from any area of potential disturbance prior to conducting mining or construction activities. These areas include previously reclaimed areas, previously disturbed un-reclaimed areas, and undisturbed areas. An estimated 15,000 cubic yards of material would be salvaged and stored for use during reclamation (Figure 4A) Pinyon pine, juniper, scrub oak, and any other small trees would be removed from previously undisturbed areas prior to stripping the topsoil. These trees would be placed in a separate pile and made available for firewood collection.

2.1.8. Fuel and Oil Storage Areas

Diesel fuel and various oils for use in mobile equipment would be stored and used on site. Secondary containment would be provided for all petroleum products. The utility company would supply electrical power to the site; however, small generators could be used initially to supply power to the main facilities, remote ventilation fans, and to the water treatment trailer. Once electrical power is available on site, the generators would be removed and/or used for emergency backup.

A Spill Control, Containment, and Contingency (SPCC) Plan for storing and using petroleum products would be prepared and implemented for the site in accordance with federal and state regulations, as the total aboveground storage of fuel and oil in containers of 55 gallons or more would exceed 1,320 gallons.

2.1.9. Warehouse and Maintenance Shops

A mobile trailer and a temporary prefabricated structure would be used initially as the warehouse and maintenance area, respectively, at the Whirlwind portal area. As the mine develops, these structures would be replaced by a one-bay service area and warehouse constructed on top of the existing forty-foot by fifty-foot concrete pad of 6" thickness. This structure would be a prefabricated metal building that is painted to blend in with the surroundings. Maintenance activities would be limited to routine service and minor repairs. A second maintenance shop is located in a shallow adit just north of the main Packrat portal.

2.1.10. Mine Offices and Shower Facilities

A four-inch thick concrete pad with nominal dimensions of twenty feet by fifty feet would be constructed immediately north of the warehouse and maintenance shop. A prefabricated metal building consisting of mine offices and change/shower facilities (i.e., dry) would be constructed on this concrete pad. This building would be contiguous with the shop and warehouse and would be painted the same color approved by the BLM. This area would have a chain link fence and gate to prevent unauthorized access when the mine is idle. Signs would be posted stating that visitors must check in at the mine office.

A portable watchman's trailer would also be located on site as shown on Figure 4A. This trailer would be approximately 10 feet x 30 feet and may be used as sleeping quarters for a security person at night or when the mine is not operating. A septic system would be installed for the shower and bathroom facilities as described under utilities below.

2.1.11. Designated Parking and Storage Areas

A gravel parking area would be constructed for employees and visitors just north of and adjacent to the mine offices. One or more material storage areas would be established on top of the Whirlwind waste rock pad. A small storage area would also be available at the north end of the Packrat waste rock pad next to the maintenance shop.

A 1,000-gallon tank containing a dilute solution of magnesium chloride would be installed on top of the pad near the Whirlwind portal. The magnesium chloride would be sprayed on the mine haulage roads to create a sealed surface to minimize the generation of fugitive dust.

2.1.12. Mine Access Roads and Pads

The Whirlwind Mine is accessed via Mesa County Road 4 $^{4}/_{10}$ (a.k.a., John Brown Canyon Road) and Mesa County Road $^{5}/_{10.}$ These county roads are primarily graded dirt with short graveled sections. The two short access roads to the Whirlwind off of 5/10 Road would remain in their current configuration as shown on Figure 2. The Packrat portal is accessed via an existing mine road off of County Road 5/10. The 10-Straight vent shaft would be accessed by an existing secondary road and two-track road off of County Road 5/10. The proposed vent shafts are located next to existing roads and the access roads are included within the proposed 100-foot by 100-foot pad area.

The access roads to the portal areas within the mine permit would be dirt and/or gravel and bermed in accordance with MSHA regulations. The roads into the Whirlwind would have swinging metal gates while the Packrat road would have a wire-rope gate. Gates would be locked during weekends, holidays, and other down times. The short access roads to ventilation shafts and power drops would typically be two-track overland roads that would only be used for periodic inspections and maintenance. No fencing or gates would be required at these sites.

The Whirlwind pad would have two levels. The lower level would be at approximately the same elevation as the portal while the upper would be built from waste rock hauled from the mine.

The Packrat pad would be relatively small (approximately 1.0 acre in disturbed area) and terraced to provide two levels. Waste rock and ore hauled out of the Packrat Portal would be dumped into bins and hauled to the Whirlwind waste rock pile while the ore would be hauled to either the Whirlwind ore stockpile or directly to the mill.

2.1.13. Utilities

The local power company would supply electricity to the site using the existing power poles and lines in the area. Additional poles and transformers would be needed at the point of use and temporary generators may be used in some areas until the power is completely established. Power drops to the Whirlwind and Packrat portal areas, Whirlwind and Packrat underground workings, and vent shafts would be installed. The approximate locations of the two pad areas for the power drops to the Packrat and Whirlwind underground workings are shown on Figures 4C and 4D, respectively.

The exact number of new power poles and the length of connecting power line would be determined by the power company in consultation with the BLM. Approximately 5 to 6 poles would likely be needed to bring the power from the Cherokee Shaft area to the Whirlwind portal area. The poles would be installed in the same power line corridor as was used previously. There are several existing power lines on top of the mesa and each of the ventilation shafts and the Whirlwind power drop could be accessed with an average of 2 additional poles. Power poles are present at the Packrat power drop area; however, 1 additional pole may be needed near the cased hole that accesses the underground workings. Power to the Packrat portal area would probably be supplied by underground lines originating at the Packrat power drop. If surface lines were needed, approximately 5 to 6 poles would be needed to support a new line from the Packrat power drop area to the Packrat portal area. The power poles would be installed next to the existing road that accesses the Hubbard Mine portal.

Water for bathrooms, showers, and other general uses would be hauled to the site from nearby, privately owned springs or wells. The mine would supply bottled water for drinking purposes. A septic system would be installed in accordance with state and county requirements near the mine offices and dry change facilities.

The main building, which includes the maintenance shop, warehouse, mine offices, and dry change facilities would be heated using propane; the propane tank would be located next to the building. The water treatment trailer would be equipped with an electrical heater for use during

the colder months. A portable propane heating system may also be used at the Packrat maintenance shop during the winter.

2.1.14. Solid Waste Storage

A roll off container for disposal of trash would be located next to the maintenance shop and warehouse. A second roll off may be located on top of the Whirlwind pad near the storage area and smaller trash barrels would be located in the shop areas. The trash would be picked up on a routine basis by a service company and disposed of at an approved landfill. No landfills would be constructed on site. Scrap metal would be stored in a bin and/or on pallets near the shop until it can be picked up for recycling. Used batteries and tires would be stored in the same area and would be picked up and recycled by vendors.

2.1.15. Ventilation Shafts

The existing 10-Straight Vent Shaft that accesses the southern portion of the Packrat Mine would be rehabilitated and used for ventilation purposes. As the mine expands, seven ventilation shafts would be added for a total of eight ventilation shafts. The location of these vent shafts may change by several hundred feet depending on the ultimate location of the drift and ventilation needs. The ventilation shafts are typically 72 inches in diameter and cased. The steel casing would be grouted where it passes through aquifers to prevent intermixing of waters between formations.

A concrete pad up to 200 square feet in size and a thickness of 6” would be constructed at each new vent shaft to provide a level platform for drilling equipment during installation. Once the shafts are completed and cased, a single-vane axial fan with a diffuser would be mounted on top of each hole. These units are typically about three to five feet high and have metal grates on top. The diffusers would be painted a color that blends with the surroundings to mitigate potential visual impacts.

The fans would be powered by electricity from nearby power poles and each unit would have locked breaker boxes at the power drop. Some additional poles and transformers would be needed to access some locations and temporary generators may used in some areas until the power is completely established. The vent shafts have been located adjacent to existing access roads. Surface disturbance at each vent shaft is estimated to be 0.23 acres consisting of a small pad area (typically 100 feet by 100 feet) that includes a 15-foot-wide, two-track access road. The vent shafts would be inspected periodically during operation (i.e., average of once per day) by Energy Fuels personnel.

2.1.16. Water Management

Surface drainage controls would consist of: (1) permanent diversion of potential run-on storm water around the portal areas utilizing ditches and culverts; (2) collection of surface runoff from the waste rock piles and other facilities in ditches and culverts that would flow into a sediment pond prior to discharge; and, (3) treatment and discharge of post-contact storm water from the ore stockpile and pad.

Excess water from the underground workings would be pumped into the lined Untreated Water Pond via a buried HDPE pipe. Surface drainage overflow from the ore pad area would also be directed to this pond. A portable, trailer-mounted water treatment plant would be installed immediately west of the collection pond. The plant would pump water from the synthetically lined collection pond and treat the water with barium chloride and ferric sulfate to precipitate out radium and uranium, and reduce selenium concentrations.

The treated water would be discharged into one of two synthetically lined ponds located immediately north of the treatment plant. Each pond would have two cells. Precipitated metals and radionuclides would settle out in the first cell and the second cell would collect the treated water prior to gravity discharge into the ephemeral drainage located immediately west of the pond. The treatment plant and ponds would be fenced and equipped with a locked gate to prevent unauthorized access.

2.1.17 Reclamation

All disturbed areas will be reclaimed to dry rangeland for wildlife habitat, which is the primary post mining land use. Bat gates will be provided at the main Packrat portal to enhance bat habitat, which is a desire of the Colorado Division of Wildlife and the BLM. Current plans are to backfill the Whirlwind Portal during reclamation; however, a bat gate could also be installed at that portal if requested by the BLM. As part of the POO process, the site will be partially reclaimed as the waste is accumulated and the waste embankment is constructed. Initially, the outer slope of the existing waste pile will be reclaimed, after it is expanded to its northern limit. As the waste embankment expands to the east, the north face will be reclaimed concurrently. Topsoil replacement will be performed by dozers spreading the material over the slope, followed by seeding in either Spring or Autumn. Final reclamation will commence at the end of the mine life, and then monitoring for revegetation success. A list of the reclamation components are as follows;

- Seal Decline and Reclaim Ore Pad Area
- Place Treatment Sludge in Mine and Remove Liners from Treatment Ponds.
- Reclaim Ventilation Shafts and Power Drops
- Dismantle Buldings and Structures at Both Portal Areas
- Remove Foundations at Whirlwind and Packrat Portals
- Install Bat Gate or backfill Packrat Portal and Seal Shop Area
- Backfill Treatment Ponds and Collection Ditches
- Backfilling and Grading at Portal Areas
- Use MSHA Berm to Re-topsoil Packrat Portal Area
- Re-Seed and Mulch the Packrat Portal Area
- Partial Backfilling and Grading of Packrat Road
- Seeding, Mulching and Blocking of Packrat Road
- Rip Compacted Traffic Areas of Whirlwind Mine Prior to Topsoiling
- Topsoil Replacement on Remaining Areas of Whirlwind Mine
- Harrow Topsoil at the Whirlwind Portal Area

- Re-Seed, Mulch and Block the Whirlwind Portal Area
- Post-Reclamation Site Drainage (restore natural drainage)
- Weed Control
- Monitoring Reclamation Success